DOCUMENT RESUME

ED 150 217 **UD 017 840**

AUTHOR	Meredith, Howard V.
TITLE	A Vignette on Human Body Growth from Infant to Adult.
PUB DATE	77
NOTE	20p.
AVAILABLE FROM	State Printing Company, Columbia, South Carolina ($1.00)
EDRS PRICE	MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS	Adolescents; Birth Order; Body Height; Body Weight; Children; *Economically Disadvantaged; Growth Patterns; *Human Body; Infants; Lower Class; Physical Characteristics; *Physical Development; Racial Characteristics; *Racial Differences; *Rural Urban Differences; Sex Differences; Upper Class
IDENTIFIERS	Africa; Asia; Europe; North America; Pacific Region; South America

ABSTRACT

This booklet pertains to the size and the form of the human body in infancy, childhood, adolescence, and adulthood. Historic and current information is presented for individuals in population groups of the Americas, Europe, Asia, Africa, and the Pacific. Differences in size and growth patterns between urban and rural individuals of the same racial descent are described. Similar comparisons are drawn between the poor and the economically privileged. Also contrasted are lowland and highland populations, first born and later born siblings, and females and males. (GC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED150217

A Vignette On Human Body Growth From Infant To Adult

Howard V. Meredith

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Howard V. Meredith

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

The State Printing Company
Columbia, South Carolina
1977

VDO 17840

Copyright © 1977 by Howard V. Meredith.
Printed in the United States of America.
All rights reserved.

Introduction

This booklet pertains to size and form of the human body in infancy, childhood, adolescence, and adulthood.* Its content focuses on growth of people past and present, near and far, poor and privileged, female and male, first-born and later-born, large and small, slender and stocky, in city and village, and on lowland and highland. Except in the section under "Female and Male," all statements on infants and children relate to persons of both sexes taken together. Each section opens by inviting the reader to discover answers to explicit questions concerning human growth.

Past and Present

Are some human populations taller and heavier today than they were a century ago? If so, how racially widespread is generation to generation increase in body size? Have larger increases occurred at adolescent ages than in childhood, or adulthood?

Infancy. Average body weight of 1-year-old Belgian, United States black, and United States white infants has risen at least 2 pounds during the last century. At the same age, average body length (full length of infant when lying on back with lower limbs extended) is no less than 1.5 inches greater than a century ago.

Childhood. At age 8 years, average standing height has increased between 5 and 6 inches during the last 100 to 125 years on Belgian and Dutch children; between 3 and 4 inches during the last 70 years on Japanese children; and between 2 and 3 inches during the last 70 years on Canadian children of Ontario, American black children in the District of Columbia, and Australian children at Sydney. For Norwegian, Japanese, and United States black children, gains in average weight at age 8 years have exceeded 8 pounds, 7 pounds, and 5 pounds respectively.

Adolescence. Typically, mid-adolescence is reached near age 13 years by females, and near age 15 years by males: at these ages, recent generation to generation (secular) changes have been greater than at childhood ages. For females at age 13 years, during the last 40 to 125 years increase in average height per decade

*Short complementary readings are available on prenatal body growth (*Child Development*, 1975, 46, 603-610), dental development (*Journal of School Health*, 1966, 36, 503-507), and puberal changes (*Journal of School Health*, 1967, 37, 171-176).

has approximated 0.6 inch at urban centers in Belgium, New South Wales, Ontario, Sweden, and the United States; 0.9 inch in northern Czechoslovakia, Japan, the Netherlands, and Norway; and slightly more than 1.0 inch on Russian youths at Syktyvkar. Generalizing for both females age 13 years and males age 15 years, gains per decade in average height and weight have been about 0.8 inch and 3.5 pounds. Assuming 20 years from one generation to the next: in several nations, females age 13 years of today, compared with their great-great-grandmothers at this age, average about 6 inches taller and more than 25 pounds heavier. Findings are similar comparing today's males age 15 years with their great-great-grandfathers.

Adulthood. The amount of secular change has increased with advance in age from infancy into adolescence: it has decreased from mid-adolescence into adulthood. At young adult ages, groups measured recently (since 1960) and earlier by 40 to 125 years show increases in average height below 0.2 inch per decade in Belgium, Canada, the Philippine Islands, and Poland; below 0.4 inch per decade in Australia and the United States; and no more than 0.5 inch per decade in Czechoslovakia, Japan, Norway, and south China. Paired with the closing sentences of the previous paragraph: today's young adults, on average, are no more than 1.8 inches taller, and 18 pounds heavier, than were their great-great-grandparents as young adults.

Near and Far

To what extent does the physique of present-day North American populations differ from that for populations in other parts of the world? Is body size or form similar for white groups in Australia, Europe, and the United States; black groups in Africa, the United States, and the West Indies; or aborigine tribes in New Guinea, Taiwan, and the United States?

Investigations made since 1960 provided all factual content in this "Near and Far" section. In the main, the research base of later sections also was supplied by studies after 1960.

Infancy. Average body weight at age 1 year is near 15 pounds for Pakistani infants; 16.5 pounds for Javanese infants; 18 pounds for South African infants of the Basotho tribe; 19 pounds for aborigine infants of Australia; 20.5 pounds for Creole infants of Surinam; 22 pounds for California black and white infants at

Oakland, Bulgarian infants at Sofia, Turkish infants at Istanbul, and Eskimo infants of southwest Alaska; and 23 pounds for Tasmanian infants.

Continuing at age 1 year, average body length is near 26 inches on Pakistani infants; 27 inches on Ladino infants of Guatemala; 28 inches on Hindu infants at Delhi, and Eskimo infants of southwest Alaska; 29 inches on Russian infants at Minsk, and those of Chinese ancestry at Hong Kong; and 30 inches on Tasmanian and Dutch infants. Girth of head and girth of chest are almost alike at age 1 year: group differences show chest girth is near 98% of head girth on Hindu, Ladino, Tunisian, and United States black infants; and near 102% on Bulgarian, Italian, Polish, and Sardinian infants.

Childhood. Average standing height at age 5 years is slightly less than 37 inches on children of the Bundi tribe in New Guinea, and 7 inches higher on Dutch children of the Netherlands. Intermediate averages are between 38 and 39 inches on Lufa of New Guinea, Lunda of Angola, Quechua of Peru, Shi of Zaire, Bolivian, Burmese, and Malayan children; between 40 and 41 inches on Hutu of Rwanda, Yoruba of Nigeria, Antilles black, Lebanese, and Venezuelan children; and between 42 and 43 inches on Blackfeet of Montana, Kirghiz of the Soviet Union, Sara of Chad, Finnish, Italian, and Lithuanian children. Bundi children at age 5 years are no taller than Hutu children at age 3 years.

At age 8 years, average shoulder width is near 10 inches on Cakchiquel, Nyakyusa, and Sara children of Guatemala, Tanzania, and Chad; and near 11 inches on Hungarian children at Budapest, and Pedi children of Transvaal. Averages for hip width vary from 7 inches on Kisi and Sara children in Africa to 8 inches on Estonian and Sicilian children in Europe. Averages for hip width relative to shoulder width are about 70% on black children of the Kisi, Nyakyusa, Pedi, and Sara tribes; 73% on Belgian, Hungarian, Japanese, Sardinian, and Taiwanese children; and 75% on Bulgarian, Kirghiz, Polish, Russian, and Sicilian children.

Adolescence. At age 15 years, average body weight of males is near 68 pounds for Bundi natives of New Guinea; 71 pounds for Hindus of Palghar Taluk; 85 pounds for Quechua of Peru, and Javanese of Sumatra; 100 pounds for Fiji islanders, Chinese at Hong Kong, and Tunisians at Cap Bon; 110 pounds for Sicilians at Palermo, and Cuban blacks at Havana; 120 pounds for French-Canadians at Montreal, and Hungarians at Budapest; and

128 pounds for American blacks and whites at Cincinnati. Compared with German youths at Düsseldorf, Bundi youths are 23% shorter in average height, and 46% lighter in average weight.

Between infancy and mid-adolescence, the lower limbs grow faster than the body stem (head, neck, and trunk). In general, the lower limbs elongate from 50% of stem length at birth, to 60% at age 1 year, and 87% at age 8 years. At age 15 years, male lower limb height relative to stem (sitting) height averages 89% on Hong Kong Chinese; 92% on New Zealand Maoris; 95% on Cuban, New Zealand, and United States whites; and 98% to 100% on blacks of Cuba, Guyana, Tanzania, and the United States.

Adulthood. During the years from mid-adolescence to early adulthood, the lower limbs grow more slowly than the body stem. This has been found from studies on Afro-blacks at Havana, Chinese at Hong Kong, Hungarians in Europe, Jat and Khatri castes in India, native Japanese, Nyakyusa in Tanzania, Quechua in Peru, Spanish-Americans in Guatemala, and whites in the United States. Collectively, lower limb height relative to sitting height, for females, falls from 91% at age 13 years to 88% in early adulthood and, for males, from 97% at age 15 years to 93% in early adulthood. The Bundi people of New Guinea are an exception, neither sex showing this decline.

Groups of adult males yielding averages for head width between 5.5 and 5.8 inches have narrow heads; those with averages between 6.1 and 6.3 inches have wide heads. Applying these categories, head width is narrow for Ami, Atayal, and Saisiat men on Taiwan; Bira, Chimba, Fali, and Nyakyusa men in Africa; Fadidja men of Egyptian Nubia; Jat and Pahira men in India; and Land Dayak men on Borneo: it is wide for Apache, Seminole, and Hutterite men in the United States; native Japanese men; Uzbek men in the Soviet Union; and white men in Denmark, France, Greece, Poland, Romania, and West Germany. Head width in relation to distance from front to back of head is, on average, 74% for Chimba, Fali, and Jat men; 78% for Danish, Haiti black, Ontario white, Land Dayak, and Melungeon men; 82% for German, Greek, Japanese, Russian, and Surinam Amerind men; 86% for Melanau men on Borneo; and 87% for Uzbek men of Tashkent.

City and Village

Among contemporary people of a particular regional and racial group, do the inhabitants of urban centers and rural hamlets differ in body size? If so, are town or country folk larger?

Infancy. On 1-year-old offspring of Romanian parents, average body weight is near 20.5 pounds for those residing in rural districts, and 1.0 pound greater for those living in urban communities. Another study at this age on Creole infants of Surinam finds average body weight 1.3 pounds less for inhabitants of rural localities than for their urban peers.

Childhood. At age 4 to 5 years, averages for standing height are higher by 1.2 inches on Nigerian children at Lagos than at the village of Imesi, 0.9 inch on Czech children at Brno than in a rural region near Olomouc, 0.8 inch on Polish children at Lublin than in an adjacent rural district, and 0.6 inch on Bantu children at Soweto than in a Transvaal rural area. For the Polish, Nigerian, and South African populations, urban children surpass rural children in average body weight by 2.6 pounds, 2.2 pounds, and 2.1 pounds respectively.

Averages for height and weight at successive annual ages from 4 to 8 years are available on contemporary rural and urban groups in the Soviet Union and in Bulgaria. Taking this age quadrennium as a whole, urban children are taller and heavier than rural children by 1.3 inches and 1.1 pounds for Chuvash at Cheboksar than on collective farms in the Kanashsky area, and by 1.1 inches and 2.3 pounds for Bulgarians at Sofia than in scattered villages. At age 8 years, differences in favor of urban children are 1.1 inches and 2.3 pounds for Lithuanian children at Vilnius than in the Moletsk region; 0.3 inch and 1.4 pounds for Moldavian children at Kishinev than in nearby rural communities; and, on Russian children, about 0.5 inch and 2.0 pounds for residents of Barnaul, Kalinin, and Ryazan than inhabitants of rural regions in the vicinity of these towns.

Adolescence. In several body measures other than height and weight, youths residing at urban centers are larger than their ethnic age-sex peers living in rural areas. For Romanian females age 13 years, urban averages exceed rural by 1.1 inches in sitting height, 0.9 inch in chest girth, 0.4 inch in shoulder width, and 0.2 inch in arm girth; corresponding values for males age 15 years are 1.4 inches, 1.3 inches, 0.6 inch, and 0.7 inch. Averages

on both females at 13 years and males at 15 years are higher at Sofia than in Bulgarian villages by 1.0 inch in sitting height, 0.4 inch in arm girth, and 0.3 inch in shoulder width and chest girth. At age 13 years, shoulder width is greater for females at Warsaw than in Polish rural districts; and chest girth is greater for Chuvash females at Cheboksar, and Moldavian females at Kishinev, than their respective rural peers. At age 15 years, averages for chest girth are larger on Tatar males at Kazan, and Moldavian males at Kishinev, than on comparable rural youths.

Adulthood. In early adulthood, women living in Polish rural districts are shorter than women at Warsaw by 1.4 inches, men residing in Finnish rural areas are shorter than men at Helsinki by 1.1 inches, and men and women inhabiting Bulgarian rural villages are shorter than those at Sofia by about 0.8 inch. Compared with young adults of Sofia, Bulgarian village men and women are smaller in average chest girth by 0.5 inch, and lighter in body weight by about 3.0 pounds.

Lowland and Highland

Is there a relation between human body size and altitude of habitat? Are people who reside near sea level larger, or smaller, than genetically similar people living at elevations above 8,000 feet?

Infancy. Peruvian Quechua neonates born to parents residing at altitudes near 13,000 feet have an average weight 0.5 pound lower than those whose parents live near sea level. Average weight at birth for white offspring of Colorado families living at elevations near 10,000 feet is about 0.8 pound less than for infants of parents residing at elevations near 5,000 feet. At altitudes of 10,000 feet, 5,000 feet, and below 1,000 feet, frequency of birth weights under 5.5 pounds among United States white live-born infants approximates 24%, 10%, and 7% respectively.

Childhood. At age 5 years, Japanese children living in mountainous areas of Kagawa prefecture average 0.5 inch shorter than those inhabiting coastal regions, and Kirghiz children at Naryn, elevation 6,600 feet, average fully an inch shorter than those at Frunze, elevation 2,600 feet. Kirghiz children age 8 years residing in the Osh region of the Pamir-Altai mountains at altitudes between 7,500 and 9,000 feet are smaller than those living about

6,000 feet lower in the Kirov district by 0.5 inch in average height, and 0.3 inch in average chest girth.

Adolescence. Kirghiz females at ages 13 and 14 years yield differences larger from the Kirov district than from the Osh region by 1.5 inches in average height, and 0.6 inch in average chest girth. On Peruvian Quechua males ages 15 and 16 years, averages are greater at sea level than at 14,000 by 1.8 inches for height, and more than an inch for chest girth.

Adulthood. Averages on Hindu men born and reared at Madras (sea level) and at Ooty (elevation 8,200 feet) show men of Madras exceed their Ooty peers by about 6 pounds in weight, 0.3 inch in height, and 0.2 inch in arm girth. These findings represent individuals employed as government clerks in the two south Indian cities.

Poor and Privileged

Among urban residents of a given race, are those in the economically and culturally privileged classes taller and heavier than those in the underprivileged classes? Is the amount of difference greater in cities of contrasting affluence and poverty than in cities where families of indigents and unskilled laborers are provided supplementary access to nourishing food and health care?

Infancy. At age 1 year, averages for body length and weight on Hindus at Delhi are near 27.5 inches and 15.5 pounds on infants in families of unskilled laborers and, on offspring of well-to-do families, higher by 5% and 24% respectively. On 1-year-old Nigerians at Lagos, averages are 28 inches and 17.5 pounds for infants whose fathers have "traditional or unskilled" occupations, and higher by 6% and 23% for those whose fathers hold professional or managerial positions.

Childhood. Children age 5 years living in the best residential sections of Santiago, Chile, average 3.5 inches taller and 6.5 pounds heavier than those residing in the poorest sections. For other city children this age belonging to high and low socioeconomic groups, differences in average height are between 3 and 4 inches at Bogotá, Delhi, Ibadan, Istanbul, and Lagos, and less than 1.5 inches at Baghdad, London, Ottawa, Minneapolis, and Newcastle-on-Tyne. At age 8 years, children of the poorest families at Bombay are shorter and lighter than those of the wealthiest families by 5.5 inches and 13 pounds. Between ages 5 and 8

years, averages on Yoruba children at Ibadan are lower for those from "poor" homes than those from "elite" homes by 0.5 inch in head girth, 0.7 inch in arm girth, and more than 8 pounds in body weight.

Adolescence. Averages for height and weight of Turkish females age 13 years at Istanbul are lower by 3.0 inches and 13.5 pounds on youths having fathers in the unskilled occupational category than youths whose fathers hold professional or executive positions. Corresponding values on males age 15 years at Istanbul are near 2.8 inches for height and 18.5 pounds for weight. High and low socioeconomic groups of Chinese youths at Hong Kong differ in average height and weight by 1.8 inches and 8.0 pounds for females age 13 years and, for males age 15 years, by 2.2 inches and 5.5 pounds.

Adulthood. Young adult males of the privileged classes are taller than those of the underprivileged classes by 0.6 inch for men of Norway, 0.8 inch for men of the Netherlands, 0.9 inch for men of south Chinese ancestry at Hong Kong, and 2.0 inches for men of Hindu ancestry at Baroba city. Comparable differences in average height for Chinese, Dutch, and Hindu young women are 1.0 inch, 1.3 inches, and fully 2.0 inches. In average weight, young men and women of the upper classes exceed those of the lower classes by about 2.5 pounds, 4.0 pounds, and 9.0 pounds for the Dutch, Chinese, and Hindu groups in turn.

First-born and Later-born

In North America, typically the first child born into a family is smaller at birth than later-born siblings: do newborn human populations in other parts of the world show this? Are first-born people of the white race, as adolescents and adults, taller or shorter than people comparable except for order of birth?

Infancy. Average weight at birth of first-born live infants is less than that for all liveborn progeny of mothers after their first: this has been found from studies in Australia, Austria, China, Denmark, England, France, Germany, Ghana, Hungary, India, Italy, Japan, Mexico, Norway, the Philippine Islands, Poland, Russia, Scotland, Tortue Island, and the United States. In general, first-born infants are lighter than later-born infants by 0.4 pound; they also are slightly shorter in body length, and smaller in head girth.

Average size at birth increases from the first child to at least the fifth: fifth-born neonates exceed first-born neonates by about 0.7 pound, or 9%, in average weight, and 0.2 inch, or 1%, in average length.

Childhood. Beyond infancy there is an inverse relation between birth order and body size. At ages from 5 to 8 years, studies in Canada, England, Germany, and the United States yield averages showing first-born children are taller than those of birth ranks "4 and up" by about 0.5 inch.

Adolescence. For ages from 13 to 15 years, a study in 1892 at Oakland, California, obtained averages for first-born youths higher than those for youths of second-to-fourth birth rank by 0.5 inch in height and 2.0 pounds in weight.

Adulthood. Averages for height of Norwegian men age 20 years measured in 1962 decrease from 70.1 inches on the first-born, through 69.7 inches on the third-born, to 69.4 inches on men in the "5 and up" category. Height of the first-born group is 1% higher than that of the "5 and up" group.

Female and Male

At what ages is the average female taller and heavier than the average male? Are sex differences in body size about the same in various tribes and races? In early adulthood, by how much does the United States white male surpass the female in average height and weight?

Infancy. Studies on newborn infants in many parts of the world show females are smaller than males by approximately 0.2 pound in average body weight, and 0.2 inch in average body length and head girth. Corresponding sex differences at age 1 year are 1.0 pound for weight, 0.6 inch for length, and 0.4 inch for head girth.

Childhood. Averages for standing height of girls and boys at age 5 years are practically alike (differ less than 0.2 inch) for black children of Angola, Creole children of Surinam, Filipino children, and Hungarian children. For Australian white, Belgian, Bulgarian, Dutch, Hindu, Japanese, Spanish, and United States black and white children, the average amount by which males are taller than females is 0.3 inch. At age 8 years, males surpass females by about 0.4 inch in height, and 1.3 pounds in weight.

Studies at this age on Hindu; Japanese; and white groups in Australia, Europe, and North America give no clear evidence of a sex difference in hip width.

Adolescence. Typically, adolescent increases in growth rates occur earlier for females than males. At age 12 years, females exceed males in average body weight, standing height, sitting height, arm girth and calf girth. British, Chilean, Chuvash, Czech, Dutch, Japanese, Moldavian, Russian, and Slovak females, together with white females of Australia, New Zealand, and the United States, surpass males by 0.4 to 0.8 inch in average height, and 2 to 6 pounds in average weight. Averages are larger for females than males by about 0.7 inch in sitting height (Bulgarian, Chinese, and Japanese groups), and by 0.2 to 0.3 inch in arm and calf girths (British, Bulgarian, and United States groups).

Adulthood. Sex-specific averages for young adults show men are taller and heavier than women by amounts from 3.2 inches, or 6%. (New Guinea Bundi) to 5.5 inches, or 9%, (United States black), and from 13.5 pounds, or 14% (native Hindu) to 33 pounds, or 25% (United States white). Differences in height are near 4.0 inches for the following groups: Khasi of Assam, Haitian of Hispaniola, Italian of Rovigo province, and Sara of Chad. Differences are between 4.5 and 5.5 inches for Bulgarian, Chinese, Dutch, Ecuadorian, Ethiopian, Japanese, Norwegian, Surinam Creole, and United States white groups.

In respect to other measures, male averages are higher than those of females by about 2.0 inches in sitting height, 1.5 inches in shoulder width, and 0.4 inch in arm and calf girths. Relative to average hip width, shoulder width is 138% and 127% for Bulgarian men and women and, for Sara men and women, 146% and 134%. Average lower limb height in relation to sitting height is 86%, 92%, and 98% for Japanese, Bulgarian, and United States black young men, and lower in each instance (83%, 89%, and 94% respectively) for corresponding groups of women.

Large and Small

Is a long newborn boy likely to become a tall adult? Is a short 10-year-old girl almost certain to become a short adult? Assume a boy is 3 feet tall at age 5 years: would he be about average as a member of the Bundi tribe in New Guinea, and extremely short as an Australian-born white boy living in New South Wales?

Infancy. At any given age, the individuals comprising a tribe, nation, urban community, or rural district vary. Among United States white newborn infants, 25% weigh less than 7.0 pounds, and 20% more than 8.0 pounds. For three other variables, about one-half of United States white neonates have a body length either less than 19 inches or more than 20.5 inches, a head girth either less than 13 inches or more than 14 inches, and a calf girth either less than 4 inches or more than 5 inches.

An individual may be large in reference to one group, and average or small in reference to another. A birth weight of 7.5 pounds is about average for a Polish infant, but heavy for an Hindu or Pakistani infant. Among Polish neonates, 7% weigh under 5.5 pounds, and 10% over 8.5 pounds; in contrast, more than 30% of liveborn Hindu neonates in Bombay weigh less than 5.5 pounds, and rarely does one weigh as much as 8.5 pounds.

Within a particular group, length at birth does not forecast height in adulthood: an individual who is short at birth may be short, average, or tall as an adult. Much shifting in position takes place in infancy, for example, given two healthy infants, infant A may be an inch shorter than B at birth, and an inch taller than B at age 2 years.

Childhood. At age 5 years, averages on Bundi children of New Guinea are 36.7 inches for standing height, and 31.0 pounds for body weight: among contemporary Australian-born white kindergarten children at Sydney, no child is below 37 inches in height, and few are below 31 pounds in weight. From measures on 1,600 natives of northeast Angola, the maximum record for height at age 8 years is 54 inches: 10% of their Dutch age-peers in the Netherlands have heights between 54 and 58 inches. Within each group, the heights of individual children are dispersed from about 7 inches below to 7 inches above the average.

Among healthy United States white children, almost all of those who are tall at age 5 years continue tall throughout childhood. Similarly, an individual who is short at age 5 years rarely attains average height in later childhood.

Adolescence. Fairly simultaneous adolescent growth spurts occur in standing height, sitting height, and external dimensions of the trunk and limbs, including hip width and calf girth: among United States white individuals these spurts reach maximum velocity at times varying for females from below 8 years to beyond 13 years, and for males from below 12 years to near 17

years. Of those white youths who are average in height at the onset of adolescence, in adulthood one-half are near average (among the middle 40% of their sex group), and the other one-half either fairly tall or short (among the upper or lower 30% of their sex group).

At age 13 years, a hip width of 9 inches is small for American-white females, and average for their black age-sex peers; and a hip width of 10 inches is large for American-black females, and average for their white age-sex peers. Hip widths greater than 10.5 inches are found for 5% and 15% of American black and white youths respectively.

A male youth age 15 years whose lower limb height is 89% of his sitting height places as average in reference to Hong Kong Chinese age-sex peers and, in reference to American black age-sex peers, among the lowest 10%. Continuing comparison of these groups, lower limb length in percentage of sitting height is 92 or less for three-fourths of Hong Kong Chinese male youths, and 101 or more for one-fourth of American black male youths.

Adulthood. Among 1,800 young adult women at Oslo, none is as short as the average height for young adult Pahira women of India, or Telefolmin women of New Guinea. The tallest among 1,500 young adult Lunda men of Angola is barely 70 inches: more than 40% of United States black and white young men exceed this height.

There is little difference between the average weight of Pahira men of West Bengal (90 pounds) and the lowest weight record of 1,800 Bulgarian men (88 pounds). The average body weight of Telefolmin men (101.6 pounds) is similar to the minimum weight on 360 Creole men of Surinam (102.5 pounds). Maximum weight among 660 Surinam young men of Hindu and Pakistani descent is 191 pounds, this weight is surpassed by more than 10% of United States black and white young men.

Slender and Stocky

Is the body trunk more stocky in infancy than in childhood? Do the upper and lower limbs become more slender during the childhood years? At any given age, are individuals usually slender (or average, or stocky) in respect to trunk, upper limbs, and lower limbs? Are some human populations more stocky, in one or more ways, than other populations?

Infancy. On Hindu infants at Delhi, Scottish infants at Edinburgh, and Swiss infants at Basel, averages for stem length and chest girth at age 1 year are practically alike. Chinese infants at Peking have a more slender body stem (chest girth about 93% of stem length), and Polish infants at Lublin a more stocky stem. French infants at Paris have more slender lower limbs than American white infants at Philadelphia: indices typifying calf girth in relation to lower limb length at age 1 year are 68% and 75% respectively.

Childhood. In general, from early infancy to late childhood the human body becomes less rotund. Between ages 4 and 8 years, findings on well-nourished white children studied in Iowa show averages declining from 40% to 35% for arm girth relative to upper limb length, 50% to 44% for calf girth relative to lower limb height, and 88% to 85% for chest girth relative to stem height.

Adolescence. At age 15 years, variations among white males residing in Lane County, Oregon, are from 28 to 46 for arm girth in percentage of upper limb length, 36 to 52 for calf girth in percentage of lower limb height, and 81 to 110 for chest girth in percentage of stem height. Individuals are not consistently slender or stocky: some youths have slender upper limbs with a moderately stocky stem, others have a moderately slender stem with stocky lower limbs, and a few have fairly slender upper limbs with fairly stocky lower limbs.

Adulthood. Adult aborigines of Taiwan, Bambuti of Africa, and Eskimos of Greenland have stocky body stems: chest girth relative to stem height averages about 117% for Taiwanese Atayal, Paiwan, and Saisiat men and women, and about 107% for Taiwanese Ami, southwest Greenland Eskimo, and Ituri pygmy men and women. Slender body stems (indices between 91% and 95%) characterize Chinese, Hindu, and Japanese adults. Arm girth is near 30% of upper limb length on Jat men of rural Uttar Pradesh, and near 35% on Ituri pygmy, Ituri Bantu, and Egyptian men. Calf girth averages about 40% of lower limb height on Nyakyusa women of Tanzania, and 49% on Mzab jewish women of Algeria.

Suggested Readings

Past and Present

American Journal of Physical Anthropology, 1976, 44, 315-326.

Annals of Human Biology, 1974, 1, 245-256.

Lipsitt, L. P., and Spiker, C. C. (Eds.) *Advances in Child Development and Behavior,* Volume 1. New York: Academic Press, 1963 (69-114).

Proceedings, Royal Society of London, 1950, 137, Series B, 443-452.

Near and Far

American Journal of Physical Anthropology, 1971, 34, 89-132.

Child Development, 1970, 41, 551-600.

Monographs, Society for Research in Child Development, 1969, 34, No. 7.

Reese, H. W. (Ed.) *Advances in Child Development and Behavior,* Volume 6. New York: Academic Press, 1971 (153-238).

City and Village

Goldfeld, A. Y., Merkova, A. M., and Tseimlina, A. G. *Materials on the physical development of children and adolescents in cities and rural localities of the U. S. S. R.* Leningrad: Meditsina, 1965.

Monographs, Society for Research in Child Development, 1969, 34, No. 1.

Voeding, 1967, 28, 435-469.

Yanev, B. (Ed.) *Physical development and fitness of the Bulgarian people from birth to age twenty-six.* Sofia: Bulgarian Academy of Sciences, 1965.

Lowland and Highland

American Journal of Physical Anthropology, 1970, 32, 401-408.

McClung, J. *Effects of high altitude on human birth.* Cambridge: Harvard University Press, 1969.

Shikoku Igaku Zasshi, 1969, 25, 570-582.

Sovetskoe Zdravookhranenie Kirgizii, 1966, 6, 12-15.

Poor and Privileged

American Journal of Diseases of Children, 1951, 82, 702-709.

Indian Pediatrics, 1972, 9, 460-466.

Wieringen, J. C. van *Seculaire groeiverschuiving,* Leiden: Netherlands Institute for Preventive Medicine, 1972.

Zeitschrift für Morphologie und Anthropologie, 1971, 63, 11-45.

First-born and Later-born

American Journal of Physical Anthropology, 1950, 8, 195-224.

British Journal of Preventive and Social Medicine, 1966, 20, 127-134.

Science, 1895, 1, 402-404.

Udjus, L. G. *Anthropometrical changes in Norwegian men in the twentieth century.* Oslo: Universitetsforlaget, 1964.

Female and Male

Acta Paediatrica Scandinavica, 1975, 64, 565-573.

American Journal of Physical Anthropology, 1977, 46, 265-274.

Twiesselmann, F. *Développement biométrique de l'enfant à l'adulte.* Bruxelles: Presses Universitaires de Bruxelles, 1969.

Zeitschrift für Morphologie und Anthropologie, 1972, 63, 323-340.

Large and Small

Annals of Human Biology, 1976, 3, 109-126.

Growth, 1976, 40, 75-81.

Lipsitt, L. P., and Spiker, C. C. (Eds.) *Advances in Child Development and Behavior,* Volume 2. New York: Academic Press, 1965 (221-256).

Monographs, Society for Research in Child Development, 1970, 35, No. 3.

Wonder and Stocky

Chai, C. K. *Taiwan aborigines: a genetic study of tribal variations.* Cambridge: Harvard University Press, 1967.

Child Development, 1951, 22, 275-283.

Growth, 1952, 16, 1-14.

Milbank Memorial Fund Quarterly, 1957, 35, 323-362.

Order from:

College of Health and Physical Education
Solomon Blatt Center
University of South Carolina
Columbia, South Carolina 29208

Price per copy, including postage:

United States and Canada $1.00
Overseas $1.60

Also available:

Height and Weight Charts for Black-American School-Age Children and Youths

Separate chart for each sex covering age period 5-17 years.
Price per chart: 25 cents plus postage.
Reduced prices for quantities of 50 and 100.

Order Form

Kindly send _____ copy (copies) of "A Vignette on Human Body Growth from Infant to Adult" to the following address:

For United States orders enclose $1.00 per copy.

For Overseas orders enclose $1.60 per copy.